

Air Quality Modeling Protocol

Merrimack Generating Station

Bow, New Hampshire

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Prepared for:

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1. INTRODUCTION

1.1 Project Overview

This modeling protocol (“Protocol”) is being submitted for review by the New Hampshire Department of Environmental Services (DES) in support of the installation of a Wet Flue Gas Desulfurization (WFGD) system (“Project”) at the coal-fired Merrimack Station power generation facility in Bow, NH. The project is being undertaken as required by RSA 125-O:13, I. Public Service Company of New Hampshire (PSNH) owns and operates the Merrimack Generating Station (“MK Station”). PSNH is a wholly-owned subsidiary of Northeast Utilities.

MK Station is a fossil fuel fired electric generating facility that generates electric power to be sold via transmission and distribution lines to PSNH customers. MK Station is PSNH’s prime base load plan, capable of generating 475 net megawatts of electricity and consists of two coal-fired utility (cyclone) steam generating units (MK1 and MK2), two combustion turbines presently operating as load shaving units (CT1 and CT2), an emergency boiler (EB), an emergency generator, primary and secondary coal crushers, and the necessary support equipment to generate electricity. MK1 was constructed in 1960 and is rated at 120 MW (gross); and MK2 was constructed in 1968 and is rated at 335 MW (gross). Both units incorporate Babcock & Wilcox cyclone combustion technology and are equipped with selective catalytic reduction and two electrostatic precipitator pollution control devices in series.

The proposed Project consists of the installation of a WFGD system as the primary means of mercury and SO₂ removal. It includes a single wet, limestone scrubber, complete with absorber, recycle pumps, air compressors, etc; limestone receiving (rail), stock-out and storage; limestone preparation and feeding into the single absorber; booster fans; gypsum de-watering, handling and storage; waste water treatment; and control systems; and all other requirements necessary to successfully integrate the Project into the Merrimack Station.

The Project, which will result in emissions increases below PSD significance levels, is a minor (non-major) modification to MK Station. As such, PSNH is required to file an application for a temporary permit for the construction of the Project including the results of an air pollution dispersion modeling impact analysis. Air quality modeling will be conducted to demonstrate that predicted concentrations of pollutants from MK Station will be in compliance with National Ambient Air Quality Standards (NAAQS) for criteria pollutants and the Ambient Air Limits (AAL) for New Hampshire Regulated Toxic Air Pollutants (RTAP).

An aerial photograph showing the location of MK Station and the surrounding area is presented in Figure 1-1.



Figure 1-1 Aerial Photograph of Merrimack Generating Station (UTM-NAD83)

2. MODELING PROCEDURES

This section describes the procedures that are proposed for conducting the air quality modeling analysis, including the models to be employed, the source parameters, meteorological data, and receptor locations and elevations.

2.1 Model Selection

The proposed FGD stack will have a stack top about 650 feet above sea level. The MK2 stack, which will be used during routine maintenance of the FGD system, has a stack top about 525 feet above sea level. The Merrimack River valley is relatively broad without steep slopes. Within 5 kilometers of the facility, the elevations are less than 650 feet above sea level. The nearest significant hill, about 950 feet tall, is about 10 kilometers to the north-northeast. This means the centerlines of the plumes containing the vast majority of the SO₂ will generally rise above most of the nearby terrain.

According to the *Guidance and Procedure for Performing Air Quality Impact Modeling in New Hampshire* (NHDES, July 2006), as of November 9, 2006 AERMOD became the primary dispersion model for all stationary source permitting projects. As stated in DES' *Guidance and Procedure for Performing Air Quality Impact Modeling in New Hampshire*, any source that submits a modeling analysis after July 31, 2006 will be required to use AERMOD as the primary method for determining compliance with National Ambient Air Quality Standards, Class II PSD Increments and Ambient Air Limits.

In addition, the *EPA Guideline on Air Quality Models (revised November 9, 2005) (40 CFR 51 Appendix W)* recommends the AERMOD model as the primary tool for predicting air quality impacts for permitting purposes. According to 40 CFR 51, Appendix W, AERMOD is appropriate for the following applications:

- Point, volume, and area sources;
- Surface, near-surface, and elevated releases;
- Rural or urban areas;
- Simple and complex terrain;
- Transport distances over which steady-state assumptions are appropriate, up to 50 km;
- One-hour to annual averaging times; and
- Continuous toxic air emissions.

Previously, in a December 2004 letter to PSNH, DES had recommended that CALMET and CALPUFF be used to model the intermediate and complex terrain impacts from the Merrimack Generating Station. This recommendation was DES' suggested resolution to previously predicted exceedances of the SO₂ NAAQS in high terrain downwind of the facility in modeling done in response to a request by EPA, dated June 5, 1991. In response to EPA's June 5, 1991 request, PSNH proposed a detailed modeling study using on-site meteorological data (which was

subsequently collected in 1994 and 1995) in order to resolve the previously predicted exceedances. Modeling using ISC and CTDMPLUS was performed, showing that stack height increases and fuel restrictions would be necessary to demonstrate compliance with the SO₂ NAAQS. In 1996, in order to pursue the possibility of raising stacks, PSNH proposed a fluid modeling demonstration as required by 40 CFR 51.100 (kk) since the stack heights at Merrimack Station are both above 65 meters (GEP de minimis height). To date, PSNH has not received the necessary EPA approval to complete the proposed study.

CALPUFF is the EPA-recommended model for long-range transport and, on a case-by-case basis, for near-field applications involving complex flows. At the time of the December 2004 letter, AERMOD was not an EPA-recommended model. CALPUFF was a more attractive choice than either of the two other EPA-recommended models for complex terrain, CTDMPLUS or the screening version CTSCREEN.

As of July 2006, AERMOD became the primary dispersion model for all stationary source permitting projects. AERMOD requires representative meteorological data. Furthermore, the *AERMOD Implementation Guide*, dated September 27, 2005, states that the surface characteristics of the meteorological site must be representative of the application site. Since the model simulations would be conducted using meteorological observations from an onsite 100-meter meteorological tower with SODAR data up to 600 meters, these recommendations will be satisfied.

Given both AERMOD and CALPUFF are appropriate choices for air quality modeling of MK Station, the AERMOD model, version 07026 with default options, is proposed for this analysis.

2.2 Source Parameters

The normal operation will be for MK1 and MK2 to be firing coal at 100% load and exhausting through the FGD stack. During annual, routine maintenance of MK2 and the FGD system, MK1 will be fired alone and exhausted through either the FGD stack or the existing MK2 stack. The combustion turbines and Emergency Boiler will be operating at their permitted limits for short-term and annual emissions for both operating cases of the steam units.

Table 2-1 shows the source characteristics for the three operating cases. The Universal Transverse Mercator (UTM) coordinates are in North American Datum (NAD) 1983 Zone 19.

Table 2-1 Source Characteristics for the Three Operating Cases.

Modeling Inputs (Metric Units)	MK1 + MK2 through FGD: Case 1	MK1 through MK2: Case 2	MK1 through FGD: Case 3	CT1	CT2	Emergency Boiler
Height (m)	135.64	96.62	135.64	6.10	6.10	6.81
Diameter (m)	6.45	4.42	6.45	4.17	4.17	1.22
Exhaust Speed (m/s)	18.29	14.75	4.17	28.38	28.38	16.46
Temperature (K)	322.6	441.5	324.2	722.0	722.0	580.4
UTM Easting (m)	299330.3	299273.7	299330.3	299092.6	299070.1	299218.4
UTM Northing (m)	4779443.9	4779520.9	4779443.9	4779438.2	4779416.9	4779539.0
Base Elevation (m)	62.8	62.8	62.8	62.8	62.8	62.8
<i>Short-term limits</i>						
SO ₂ (g/s)	322.4	847.3	84.7	16.2	16.2	4.9
PM ₁₀ (g/s)	141.6	42.1	42.1	1.5	1.5	0.3
NO ₂ (g/s)	-----	-----	-----	-----	-----	-----
CO (g/s)	11.6	3.1	3.1	1.9	1.9	0.4
<i>Annual limits</i>						
SO ₂ (g/s)	322.4	847.3	84.7	16.2	16.2	1.2
PM ₁₀ (g/s)	141.6	42.1	42.1	1.5	1.5	0.3
NO ₂ (g/s)	229.2	142.5	107.9	1.1	1.1	0.5
CO (g/s)	-----	-----	-----	-----	-----	-----

Notes: NO₂ emissions multiplied by 0.75 per DES air modeling guidance.

No annual CO standard and no short-term NO₂ standard. Although the annual PM₁₀ standard has been revoked, annual-averaged PM₁₀ will be modeled as a surrogate for PM_{2.5} following EPA guidance. The highest annual concentration will be compared with the PM₁₀ standards.

2.3 GEP Stack Height

The EPA Good Engineering Practice (GEP) Guidelines provide a method for determining a GEP formula stack height based on the dimensions of the dominant structures. Site and structure engineering drawings were provided by PSNH.

The Building Profile Input Program (BPIP) (dated 04274 with the PRIME option), which implements this guidance, was used to define both the GEP stack height and the effective building dimensions of the dominant structure (as a function of flow vector) for each of the stacks. The formula GEP stack height for all stacks at the MK Station is 135.64m (445 feet).

Figure 2-1 shows a plot of the MK Station buildings and stacks. Figure 2-2 shows the buildings dimensions used in BPIP superimposed on a Google Earth image of the site.

The BPIP results for MK Station are presented in Appendix A.

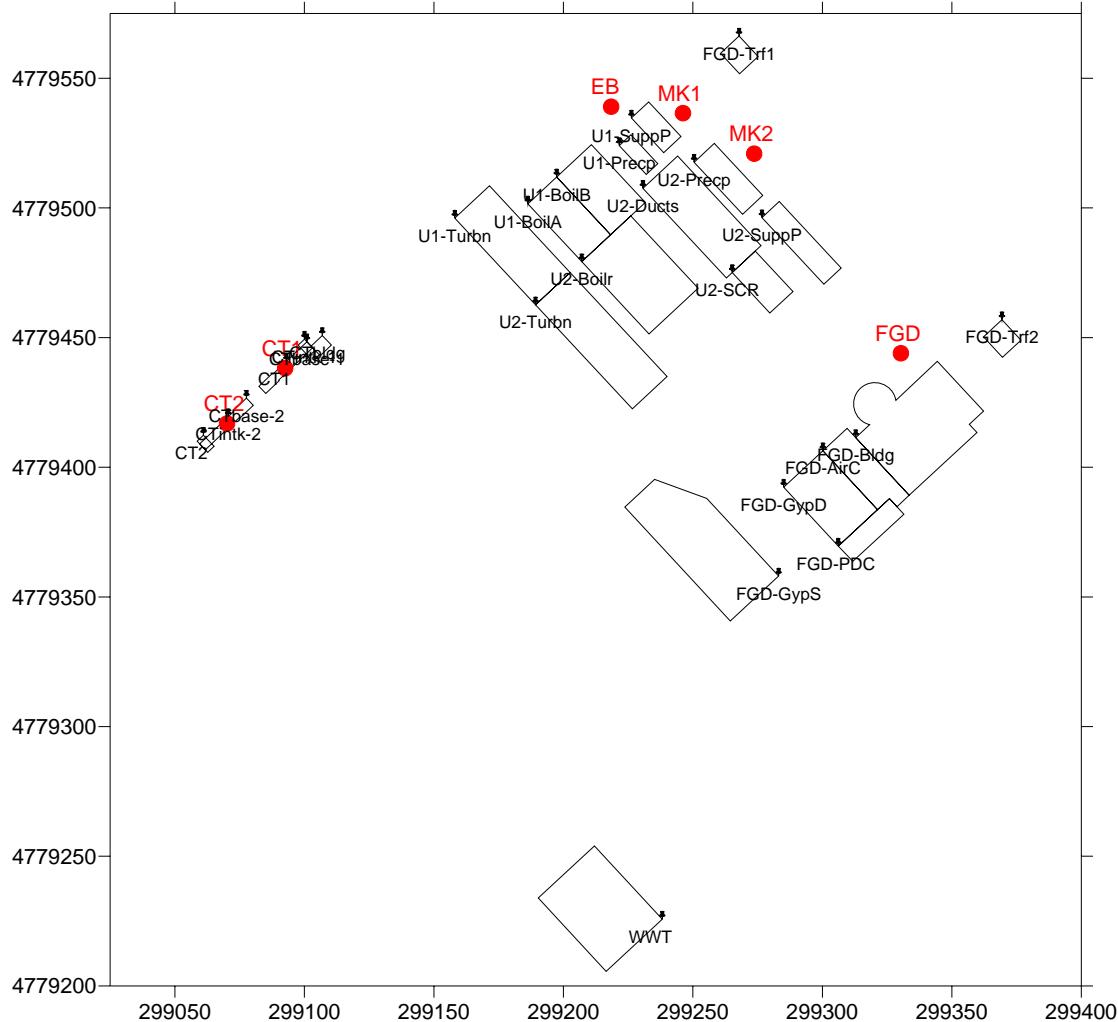


Figure 2-1 Plot of BPIP input file stacks and buildings for MK Station (UTM NAD 1983).

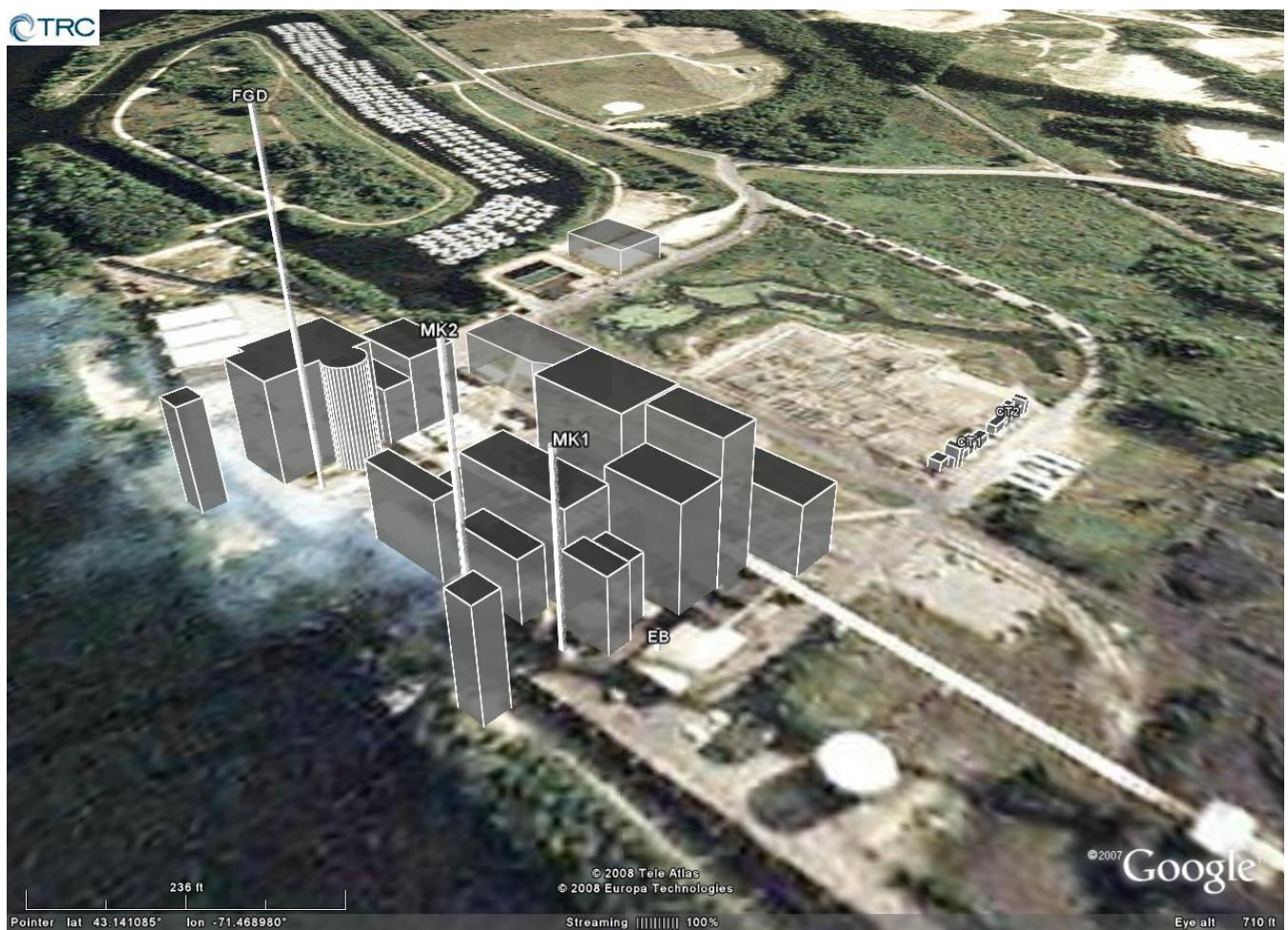


Figure 2-2

Three-dimensional illustration of BPIP buildings and stacks for MK Station superimposed on Google Earth aerial image.

2.4 Meteorological Data

The onsite meteorological tower data were provided by DES for the 23-month period January, 1994 through November, 1995. These data included dry bulb temperature, wind speed and direction, sigma-theta and sigma-w at fixed instrumented levels of the tower, and wind speed and direction derived from SODAR measurements at levels above the tower. Table 2-2 shows the data available for modeling.

Table 2-2 Tower data (2-100m) and SODAR data (120m-600m)

Height (m)	Temperature (deg C)	Wind Speed (m/s)	Wind Direction (deg)	Sigma-Theta (deg)	Sigma-w (m/s)
2	X				
10	X	X	X	X	X
40	X				
70	X	X	X	X	X
100	X	X	X	X	X
120-600 at 30m intervals		X	X		

The height of SODAR data varied with atmospheric conditions. The maximum height for wind data was 600m, but data were not always available at the highest few levels.

The meteorological data will be processed using AERMET (v06341). In addition to the onsite meteorological data, AERMET requires surface observations of sky cover, ceiling height and surface pressure and upper air observations of wind and temperature. The additional surface observations were obtained from Concord Municipal Airport (station #14745) observations which were also provided by DES in CD144 format. Soundings from Portland, ME (station #14764) and Gray, ME (station #54762) were obtained to provide the upper air data. These data were available from Portland until September 21, 1994. From September 22, 1994 through 1995, the upper air data were measured at Gray. These were obtained in the TD6201 fixed-block format that is compatible with AERMET.

The AERMET model only allows 20 levels of data for each hour. This means that all five tower levels and fifteen SODAR levels can be used. Since plume heights could exceed 600m, the top wind levels of 510m, 540m, 570m and 600m were included. Instead the two levels at 330m and 420m were discarded since winds at those levels could be interpolated from adjacent levels at 300m, 360m, 390, and 450m. Following the AERMET User's Guide, a minimum wind speed of 0.3 m/s was set for the tower wind speeds. Winds below 0.3 m/s are then set to calm by AERMET.

In addition to meteorological observations, AERMET requires the values of the land cover characteristics albedo, Bowen ratio, and roughness length. These can be specified in sectors as small as 30 degrees of arc, but should be chosen to represent regions of similar land cover. Based on discussions with DES, five sectors of similar land cover were chosen; (1) 80-150 degrees, (2) 150-180 degrees, (3) 180-315 degrees, (4) 315-345 degrees, and (5) 345-80 degrees.

In January 2008, EPA released the AERSURFACE tool (version 08009), which estimates the values of albedo, Bowen ratio, and roughness length using the 1992 National Land Cover Data. The data file “new_hampshire_NLCD_erd031600.tif” was downloaded from the USGS web site and used in the analyses.

The latitude and longitude of (43.14N, 71.47W) were used for the location of the meteorological tower. The default radius of one kilometer and average surface moisture conditions were selected. Monthly land cover characteristics were assigned using the following seasonal categories; (1) midsummer with lush vegetation was assigned to June, July and August, (2) autumn with unharvested cropland was assigned to September and October, (3) late autumn after frost and harvest (or winter with no snow) was assigned to November, (4) winter with continuous snow (more than 15 days per month) was assigned to December, January, February and March, and (5) transitional spring was assigned to April and May.

The AERSURFACE input and output files are reproduced in Appendix B.

The wind rose for the onsite meteorological tower (10m level) is shown in Figure 2-3.

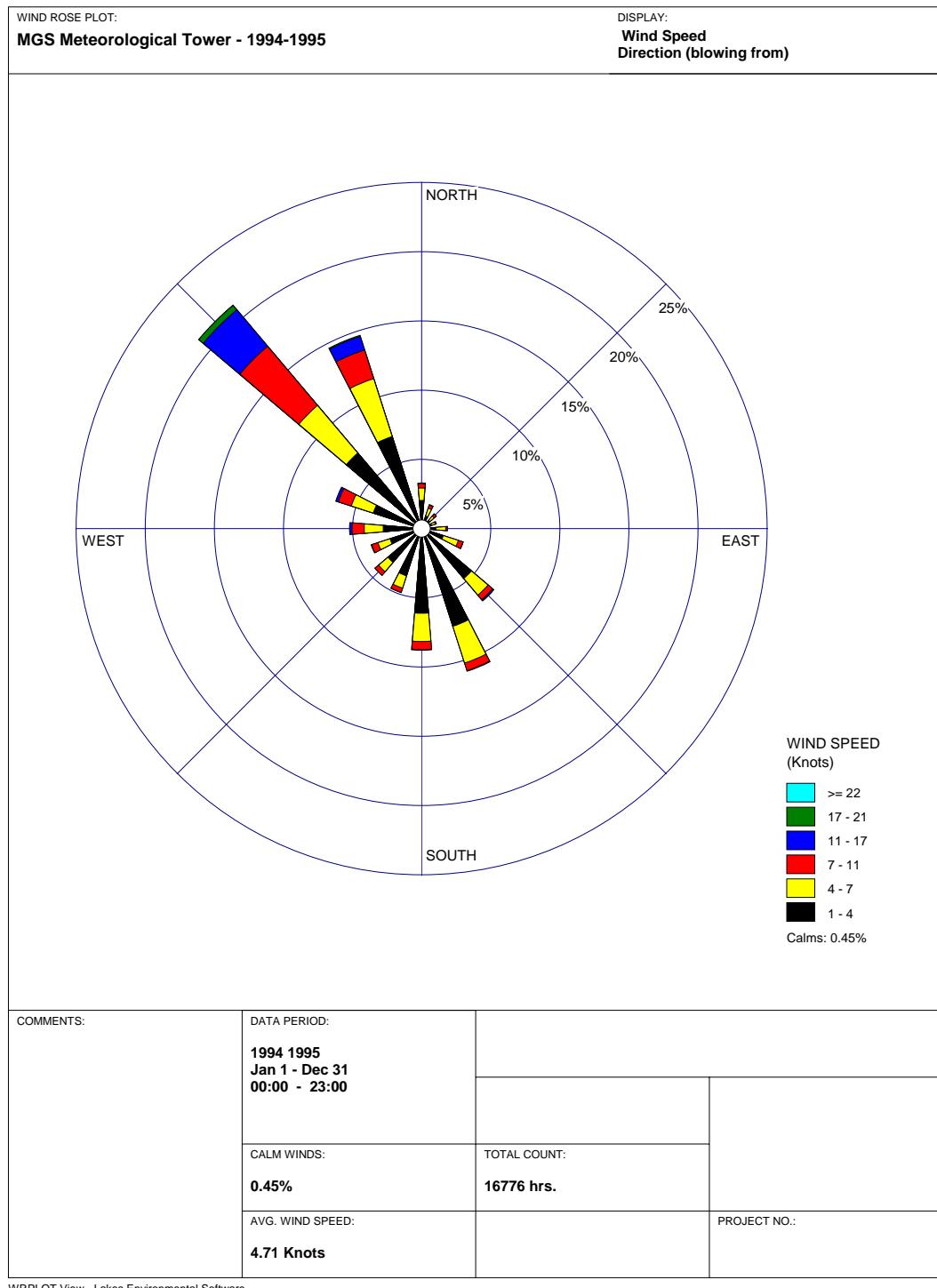


Figure 2-3 Wind rose for onsite meteorological tower at 10m for 1994-1995.

2.5 Model Receptors

The property is surrounded by the Merrimack River to the east, a fence from the river westward and northward to the storage piles and by a creek and wetlands north of the storage piles to the river. Fence line receptors were placed along these boundaries at a maximum of 20m intervals for a total of 317 locations. The property is inaccessible to the public within this line of receptors. Figure 2-4 shows the aerial photograph of the plant with the UTM coordinates of the fence line boundary and the BPIP buildings superimposed. The close match of photograph and footprint of the fence line and BPIP inputs ensures that the facility and sources are correctly located.

A polar receptor grid will be centered on the FGD stack. Receptors will be located every 10 degrees at the following distances from the origin:

- At 20m intervals from 20m to 200m;
- At 50m intervals from 200m to 500m;
- At 100m intervals from 500m to 2,000m;
- At 250m intervals from 2,000m to 10,000m; and
- At 500m intervals from 10,000m to 30,000m.

This leads to 103 rings of receptors along 36 directional radials. Receptors within the fence line will be excluded, leading to 3337 polar grid receptors. Adding the 317 fence line receptors, the total number of receptors to be modeled is 3654.

Terrain elevations were obtained from 30m Digital Elevation Model (DEM) format. The data were processed using AERMAP (v06341). DEM data are in NAD 1927 UTM coordinates but were converted to the 1983 datum by AERMAP. A plot of the terrain from the USGS DEM data is shown in Figure 2-5 and the receptors are shown in Figure 2-6.

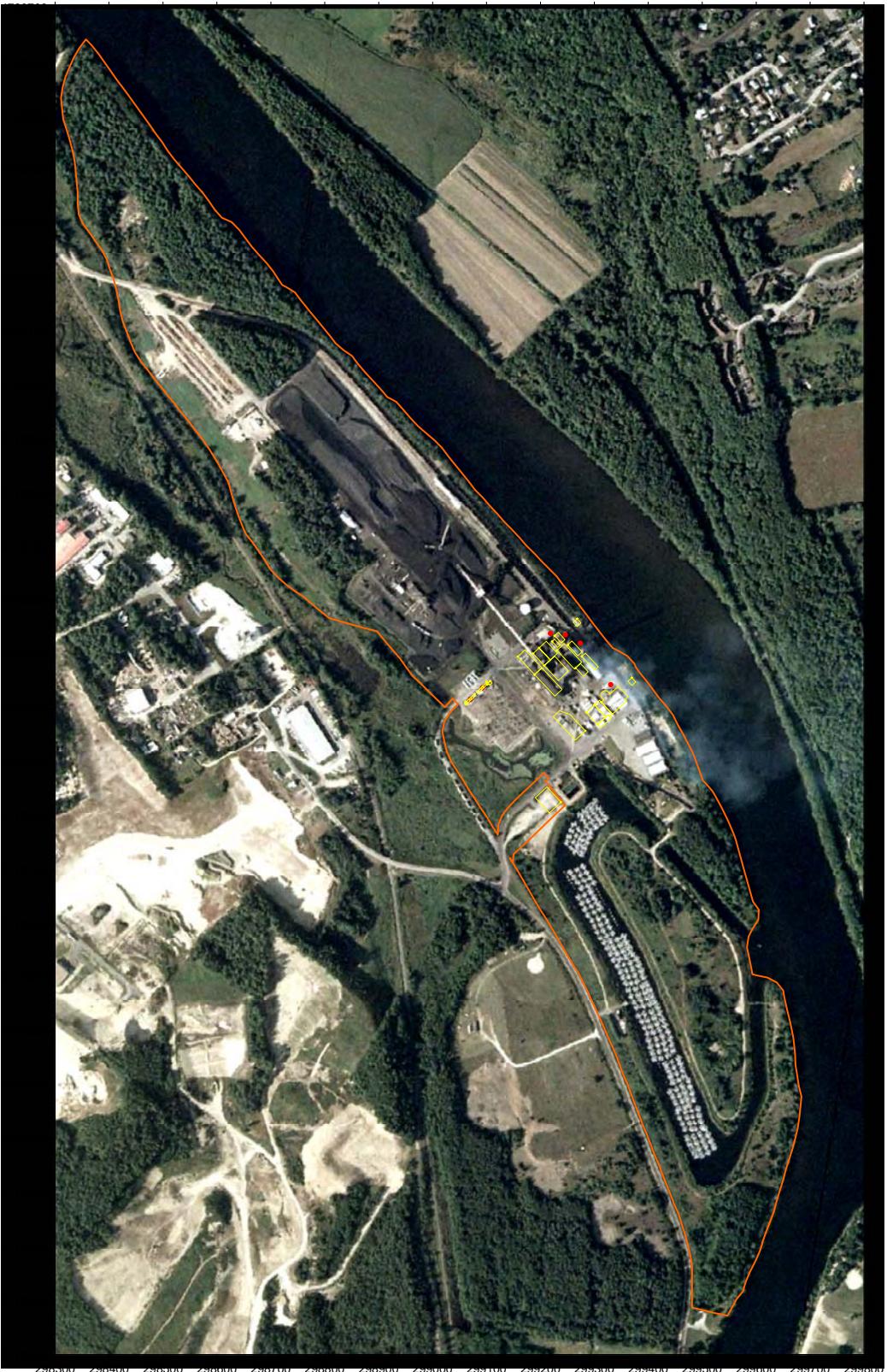


Figure 2-4 Aerial photograph of the plant with the UTM coordinates of the fence line boundary and the BPIP buildings superimposed.

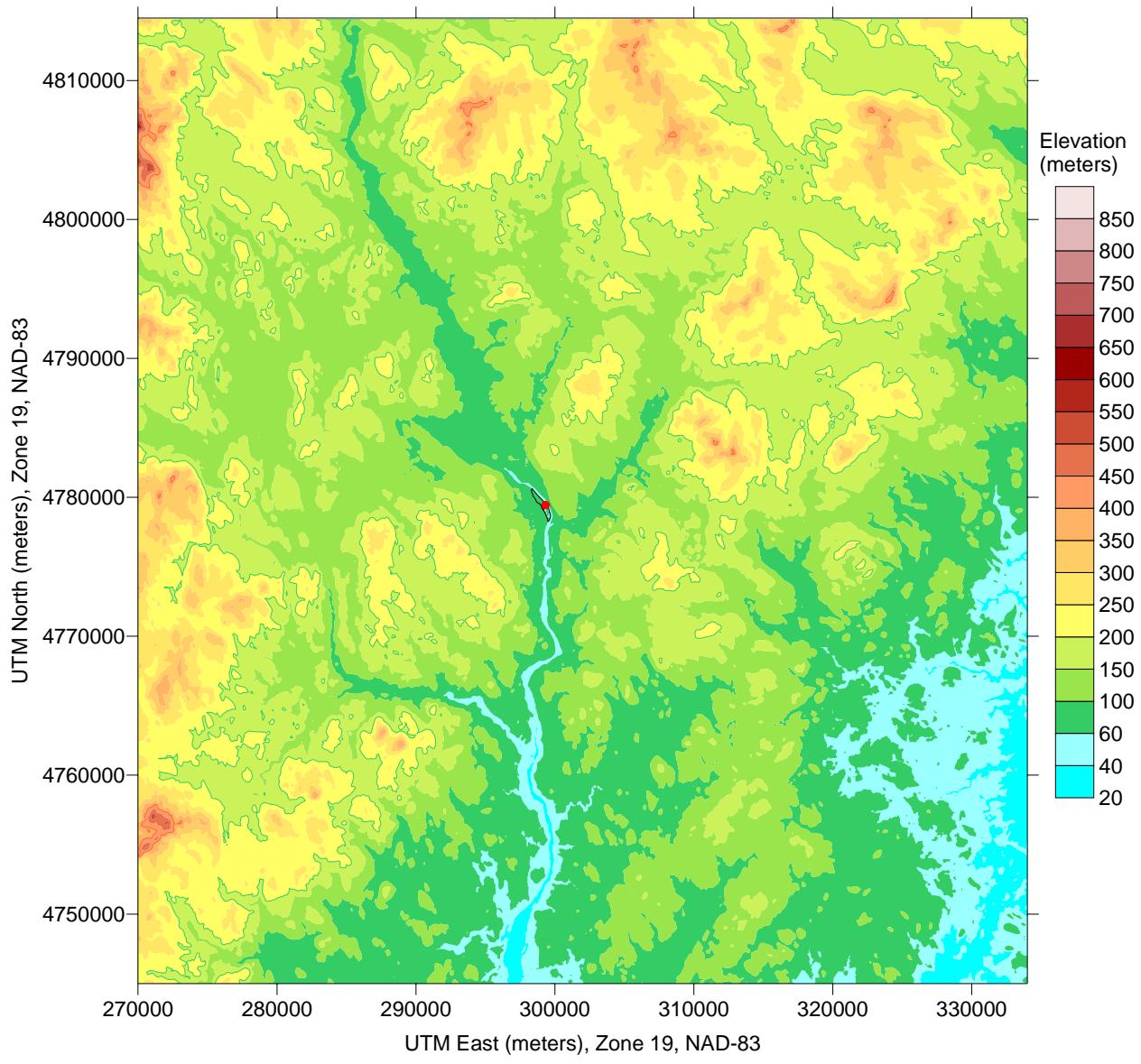


Figure 2-5 Terrain elevations from USGS DEM data. MK Station noted by red dot.

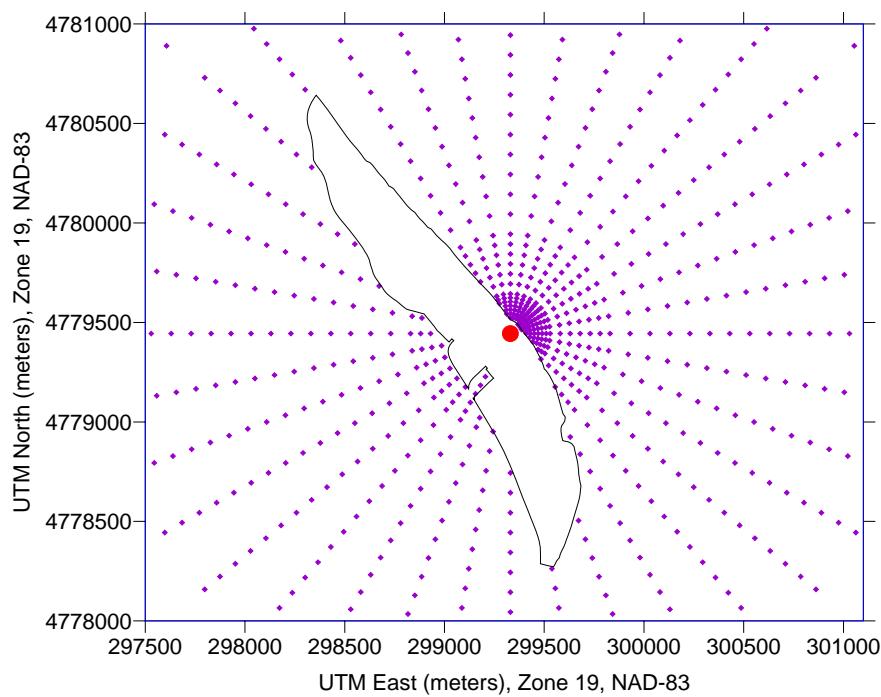
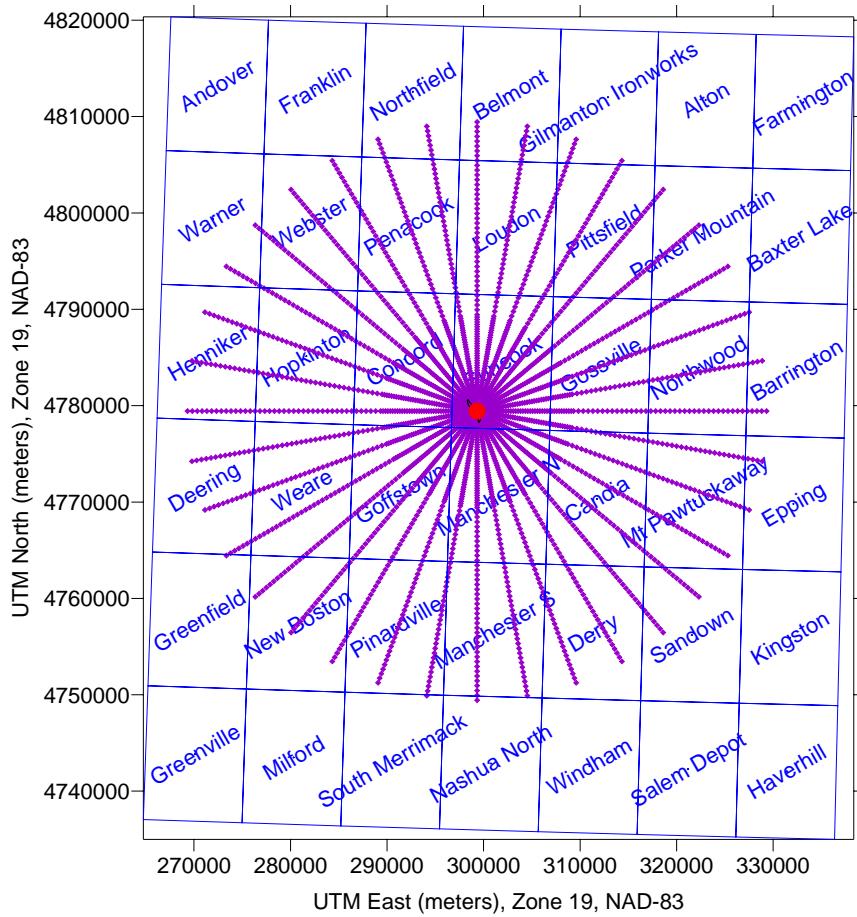


Figure 2-6 Receptor grid proposed for MK Station superimposed on the USGS quadrangles. Near-field receptors, fence line and sources (red dots) are shown in lower image.

2.6 Background Air Quality

Background concentrations consist of (1) monitoring data that represent the uniform regional air quality and (2) a modeled inventory of nearby sources that represent the local impacts of sources not well captured by the monitoring data.

Monitored Background

The DES web site (<http://www.des.state.nh.us/ard/pdf/BackgroundData.pdf>) contains the monitored background concentrations for the state. For the Merrimack Generating Station the sites most representative of the regional background are the Concord monitor for SO₂, and the Manchester monitor for PM₁₀ and NO₂. The Pembroke monitor captures the MK Station emissions and does not represent regional background. Concord is the next closest site to the facility but does not measure PM₁₀ or NO₂.

Table 2-3 Monitored Background Concentrations (μg/m³)

Monitor	SO₂			PM₁₀		NO₂
	Annual	HSH-24h	HSH-3h	Annual	HSH-24h	Annual
Concord	8	42	152	---	---	---
Manchester	---	---	---	20	38	24

Modeled Background

The interactive source inventory that represents the modeled background was provided by the DES assuming that the largest Significant Impact Area (SIA) for MK Station is 30 km. The SIA is pollutant specific and will be largest for SO₂. The SIA for PM₁₀, NO₂ and CO will be much smaller.

The DES provided nine interactive background sources with the UTM source locations in NAD 1927. These were converted to NAD 1983 by Corpscon (v6.0.1, U.S. Army Corps of Engineers, www.tec.army.mil) for AERMOD model inputs. Elevations for the last four sources were not provided and were estimated by TRC from terrain data. The source characteristics are shown in Tables 2-4(a) and the emission rates in Table 2-4(b). Building data were also provided by DES for the background sources. These coordinates were left in the original NAD 1927 because the coordinates for the stacks and buildings are only used in a relative, and not absolute, sense to provide building heights and projected widths and lengths. The BPIP input and output files for the interactive sources are presented in Appendix C.

Table 2-4(a) Interactive source inventory stack data with coordinates in NAD 1983 Zone 19.

Source	UTM-E (m)	UTM-N (m)	Elev. (m)	Stack Hgt (m)	Diam. (m)	Temp. (K)	Speed (m/s)
Wheelabrator	290925	4796063	87.5	73.15	1.724	408.2	26.03
ESMI	299503	4800138	132.6	16.76	1.311	415.4	16.79
NH DOC	292143	4789108	107.0	12.65	0.509	449.8	11.69
NYCOA	298466	4760813	44.2	53.64	2.743	510.9	1.77
ALLTEX	300846	4761723	86.6	6.10	0.713	458.0	8.99
Youth Dev Ctr	298546	4765723	68.9	19.81	1.219	463.7	6.54
Concord Steam	293117	4786030	96.9	45.72	2.134	449.8	14.42
Concord Hospital	291867	4785937	125.0	37.80	1.219	510.9	8.97
St. Pauls School	290823	4785456	91.1	30.48	2.438	449.8	2.15

Table 2-4(b) Interactive source inventory emission parameters (units are g/s)

Source	SO2	SO2 annual	PM10	PM10 annual	NO2
Wheelabrator	2.539	2.539	0.887	0.887	12.900
ESMI	6.048	2.874	2.205	1.022	1.435
NH DOC	4.847	2.483	0.376	0.193	0.871
NYCOA	17.880	2.258	1.058	0.134	0.719
ALLTEX	6.330	1.354	0.292	0.017	0.237
Youth Dev Ctr	13.130	2.868	0.845	0.185	0.504
Concord Steam	41.160	41.160	2.630	2.630	11.090
Concord Hospital	2.767	0.895	0.111	0.036	0.315
St. Pauls School	4.489	0.936	0.466	0.149	1.319

APPENDIX A

BUILDING PROFILE INPUT PROGRAM FOR MK STATION

BPIP Input File (UTM coordinates in NAD 1983 zone 19)

'Merrimack Station with FGD - 14 February 2008'
'P'
'METERS' 1.0
'UTMY' 0.00
26
'U1-Turbn' 1 62.8
4 27.127
299158.073 4779496.057
299171.448 4779508.529
299202.629 4779475.092
299189.254 4779462.619
'U2-Turbn' 1 62.8
4 25.298
299189.254 4779462.619
299202.629 4779475.092
299240.047 4779434.967
299226.672 4779422.494
'U1-BoilA' 1 62.8
4 54.254
299186.300 4779501.541
299197.446 4779511.935
299218.234 4779489.643
299207.088 4779479.249
'U1-BoilB' 1 62.8
4 40.538
299197.446 4779511.935
299210.821 4779524.407
299231.609 4779502.115
299218.234 4779489.643
'U1-Precp' 1 62.8
4 24.079
299221.591 4779524.031
299226.049 4779528.188
299236.443 4779517.042
299231.985 4779512.885
'U1-SuppP' 1 62.8
4 28.651
299226.275 4779534.650
299232.962 4779540.886
299245.435 4779527.511
299238.747 4779521.275
'U2-Boilr' 1 62.8
4 55.169
299207.088 4779479.249
299226.036 4779496.918
299252.020 4779469.054
299233.072 4779451.385
'U2-Ducts' 1 62.8
4 37.490
299230.720 4779507.538
299244.095 4779520.010
299276.315 4779485.458
299262.940 4779472.986
'U2-SCR ' 1 62.8
4 16.459
299265.169 4779475.064
299274.086 4779483.379
299288.637 4779467.775
299279.720 4779459.460

'U2-Precp'	1	62.8
4		24.079
	299250.481	4779517.630
	299258.283	4779524.906
	299276.992	4779504.844
	299269.190	4779497.568
'U2-SuppP'	1	62.8
4		30.785
	299276.691	4779496.228
	299283.379	4779502.464
	299307.284	4779476.829
	299300.596	4779470.592
'CTbldg'	1	62.8
4		3.658
	299106.91	4779450.81
	299110.43	4779447.13
	299106.09	4779443.00
	299102.59	4779446.68
'CTbase-1'	1	62.8
8		3.658
	299100.98	4779448.38
	299103.19	4779446.06
	299090.08	4779433.60
	299090.29	4779433.38
	299085.08	4779428.44
	299082.46	4779431.21
	299087.66	4779436.14
	299087.87	4779435.92
'CT1'	1	62.8
4		6.096
	299093.04	4779440.83
	299095.24	4779438.51
	299092.15	4779435.57
	299089.94	4779437.89
'CTintk-1'	1	62.8
4		8.23
	299100.04	4779449.37
	299104.13	4779445.06
	299101.67	4779442.73
	299097.58	4779447.04
'CTbase-2'	1	62.8
8		3.658
	299077.65	4779426.63
	299080.27	4779423.87
	299075.07	4779418.93
	299074.86	4779419.15
	299061.75	4779406.70
	299059.55	4779409.02
	299072.66	4779421.47
	299072.45	4779421.69
'CT2'	1	62.8
4		6.096
	299061.04	4779412.37
	299065.13	4779408.06
	299062.68	4779405.72
	299058.58	4779410.03
'CTintk-2'	1	62.8
4		8.23
	299070.59	4779419.50
	299072.79	4779417.18
	299069.70	4779414.24
	299067.49	4779416.56

'FGD-Bldg'	1	62.8
	31	41.45
299312.88		4779411.43
299318.24		4779416.43
299316.92		4779416.89
299315.63		4779417.61
299314.50		4779418.55
299313.55		4779419.68
299312.82		4779420.95
299312.32		4779422.34
299312.09		4779423.79
299312.11		4779425.26
299312.40		4779426.71
299312.94		4779428.08
299313.72		4779429.33
299314.70		4779430.42
299315.87		4779431.32
299317.18		4779432.00
299318.59		4779432.43
299320.05		4779432.61
299321.52		4779432.52
299322.95		4779432.16
299324.30		4779431.56
299325.52		4779430.73
299326.57		4779429.70
299327.42		4779428.49
299328.03		4779427.14
299328.39		4779425.82
299344.42		4779440.87
299362.25		4779421.65
299356.76		4779416.56
299359.69		4779413.40
299333.54		4779389.18
'FGD-Trf1'	1	62.8
	4	41.45
299267.87		4779566.26
299275.21		4779558.35
299268.04		4779551.70
299260.69		4779559.61
'FGD-Trf2'	1	62.8
	4	41.45
299369.35		4779456.90
299376.69		4779449.00
299369.53		4779442.36
299362.22		4779450.28
'FGD-GypD'	1	62.8
	4	31.09
299285.05		4779392.31
299300.20		4779406.37
299321.30		4779383.64
299306.14		4779369.58
'FGD-AirC'	1	62.8
	6	22.86
299300.20		4779406.37
299309.54		4779415.03
299333.54		4779389.18
299328.82		4779384.77
299325.89		4779387.91
299321.30		4779383.64

'FGD-PDC'	1	62.8		
	4	7.62		
299306.14		4779369.58		
299325.89		4779387.91		
299331.51		4779381.88		
299311.76		4779363.75		
'FGD-GypS'	1	62.8		
	5	18.90		
299283.14		4779358.04		
299264.47		4779340.72		
299223.71		4779384.64		
299235.22		4779395.32		
299255.34		4779387.99		
'WWT'	1	62.8		
	4	12.19		
299238.20		4779225.73		
299216.53		4779205.62		
299190.31		4779233.88		
299211.98		4779253.99		
6				
'MK1'	'	62.80	69.190	299246.182
'MK2'	'	62.80	97.231	299273.671
'FGD'	'	62.80	135.64	299330.33
'CT1'	'	62.80	6.096	299092.590
'CT2'	'	62.80	6.096	299070.140
'EB'	'	62.80	6.806	299218.448
				4779536.543
				4779520.918
				4779443.94
				4779438.200
				4779416.870
				4779539.021

BPIP Output File

Merrimack Station with FGD - 14 February 2008

BPIP (Dated: 04274)

DATE : 2/25/2008

TIME : 17:17:35

Merrimack Station with FGD - 14 February 2008

=====

BPIP PROCESSING INFORMATION:

=====

The P flag has been set for preparing downwash related data
for a model run utilizing the PRIME algorithm.

Inputs entered in METERS will be converted to meters using
a conversion factor of 1.0000. Output will be in meters.

The UTMP variable is set to UTMY. The input is assumed to be in
UTM coordinates. BPIP will move the UTM origin to the first pair of
UTM coordinates read. The UTM coordinates of the new origin will
be subtracted from all the other UTM coordinates entered to form
this new local coordinate system.

Plant north is set to 0.00 degrees with respect to True North.

Merrimack Station with FGD - 14 February 2008

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQNL	Preliminary* GEP Stack Height Value
MK1	69.19	0.00	135.64	135.64
MK2	97.23	0.00	135.64	135.64
FGD	135.64	0.00	135.64	135.64
CT1	6.10	0.00	135.64	135.64
CT2	6.10	0.00	135.64	135.64
EB	6.81	0.00	135.64	135.64

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

BPIP (Dated: 04274)

DATE : 2/25/2008

TIME : 17:17:35

Merrimack Station with FGD - 14 February 2008

BPIP output is in meters

SO BUILDHGT MK1	54.25	54.25	54.25	54.25	54.25	54.25	54.25
SO BUILDHGT MK1	54.25	54.25	54.25	40.54	37.49	37.49	37.49
SO BUILDHGT MK1	37.49	37.49	37.49	54.25	54.25	54.25	54.25
SO BUILDHGT MK1	54.25	54.25	54.25	54.25	54.25	54.25	54.25
SO BUILDHGT MK1	54.25	54.25	54.25	40.54	37.49	41.45	
SO BUILDHGT MK1	41.45	41.45	41.45	54.25	54.25	54.25	54.25
SO BUILDWID MK1	70.36	72.87	73.16	71.23	69.28	70.25	
SO BUILDWID MK1	69.08	65.82	60.55	68.05	37.74	64.94	
SO BUILDWID MK1	59.66	57.02	69.91	50.65	59.08	65.72	
SO BUILDWID MK1	70.36	72.87	73.16	71.23	69.28	70.25	
SO BUILDWID MK1	69.08	65.82	60.55	68.05	37.74	76.55	
SO BUILDWID MK1	46.59	44.39	47.87	50.65	59.08	65.72	
SO BUILDLEN MK1	53.44	44.71	35.91	30.36	29.46	40.67	
SO BUILDLEN MK1	50.65	59.08	65.72	70.36	50.40	86.00	
SO BUILDLEN MK1	79.29	72.89	74.36	69.08	65.82	60.55	
SO BUILDLEN MK1	53.44	44.71	35.91	30.36	29.46	40.67	
SO BUILDLEN MK1	50.65	59.08	65.72	70.36	50.40	47.83	
SO BUILDLEN MK1	45.45	43.70	45.33	69.08	65.82	60.55	
SO XBADJ MK1	-86.14	-84.51	-80.30	-73.66	-68.37	-69.36	
SO XBADJ MK1	-68.24	-65.05	-59.88	-52.89	-4.61	-34.36	
SO XBADJ MK1	-23.37	-13.43	-7.17	6.46	15.77	24.61	
SO XBADJ MK1	32.70	39.79	44.39	43.30	38.91	28.69	
SO XBADJ MK1	17.60	5.97	-5.84	-17.47	-45.79	-159.87	
SO XBADJ MK1	-166.11	-169.04	-171.30	-75.54	-81.59	-85.16	
SO YBADJ MK1	17.71	7.87	-2.22	-12.24	-22.17	-32.07	
SO YBADJ MK1	-41.00	-48.68	-54.88	-52.12	-35.12	-47.83	
SO YBADJ MK1	-43.83	-38.26	-34.40	-42.92	-35.51	-27.02	
SO YBADJ MK1	-17.71	-7.87	2.22	12.24	22.17	32.07	
SO YBADJ MK1	41.00	48.68	54.88	52.12	35.12	45.66	
SO YBADJ MK1	33.44	7.13	-19.14	42.92	35.51	27.02	
SO BUILDHGT MK2	54.25	54.25	54.25	54.25	54.25	54.25	
SO BUILDHGT MK2	54.25	54.25	54.25	54.25	40.54	41.45	
SO BUILDHGT MK2	30.78	30.78	37.49	37.49	41.45	54.25	
SO BUILDHGT MK2	54.25	54.25	54.25	54.25	54.25	54.25	
SO BUILDHGT MK2	54.25	54.25	54.25	54.25	40.54	41.45	
SO BUILDHGT MK2	41.45	41.45	41.45	41.45	41.45	54.25	
SO BUILDWID MK2	70.36	72.87	73.16	71.23	69.28	70.25	
SO BUILDWID MK2	69.08	65.82	60.55	53.44	61.01	76.55	
SO BUILDWID MK2	35.72	38.91	69.91	79.09	69.36	65.72	
SO BUILDWID MK2	70.36	72.87	73.16	71.23	69.28	70.25	
SO BUILDWID MK2	69.08	65.82	60.55	53.44	61.01	76.55	
SO BUILDWID MK2	46.59	44.39	47.87	49.89	50.39	65.72	
SO BUILDLEN MK2	53.44	44.71	35.91	30.36	29.46	40.67	
SO BUILDLEN MK2	50.65	59.08	65.72	70.36	72.87	47.83	
SO BUILDLEN MK2	78.39	74.17	74.36	76.23	60.47	60.55	
SO BUILDLEN MK2	53.44	44.71	35.91	30.36	29.46	40.67	
SO BUILDLEN MK2	50.65	59.08	65.72	70.36	72.87	47.83	
SO BUILDLEN MK2	45.45	43.70	45.33	45.83	49.02	60.55	
SO XBADJ MK2	-75.53	-79.23	-80.52	-79.36	-79.39	-85.35	
SO XBADJ MK2	-88.73	-89.41	-87.37	-82.68	-75.47	80.43	
SO XBADJ MK2	-24.30	-18.32	-34.45	-24.77	79.66	8.98	

SO	XBADJ	MK2	22.08	34.51	44.60	49.00	49.92	44.68
SO	XBADJ	MK2	38.08	30.33	21.65	12.32	2.61	-128.25
SO	XBADJ	MK2	-135.01	-139.40	-144.02	-144.27	-140.13	-69.53
SO	YBADJ	MK2	47.50	39.04	29.40	18.86	7.47	-4.79
SO	YBADJ	MK2	-16.91	-28.52	-39.26	-48.80	-48.72	-45.88
SO	YBADJ	MK2	-25.76	-22.05	-50.40	-49.19	54.28	-54.51
SO	YBADJ	MK2	-47.50	-39.04	-29.40	-18.86	-7.47	4.79
SO	YBADJ	MK2	16.91	28.52	39.26	48.80	48.72	45.88
SO	YBADJ	MK2	39.14	18.15	-3.14	-24.34	-44.80	54.51

SO	BUILDHGT	FGD	41.45	41.45	41.45	41.45	41.45	41.45
SO	BUILDHGT	FGD	41.45	54.25	54.25	54.25	54.25	55.17
SO	BUILDHGT	FGD	41.45	41.45	41.45	41.45	41.45	41.45
SO	BUILDHGT	FGD	41.45	41.45	41.45	41.45	41.45	41.45
SO	BUILDHGT	FGD	41.45	54.25	54.25	54.25	54.25	41.45
SO	BUILDHGT	FGD	41.45	41.45	41.45	41.45	41.45	41.45
SO	BUILDWID	FGD	50.01	48.99	47.83	45.45	43.70	45.33
SO	BUILDWID	FGD	45.83	65.82	60.55	53.44	44.71	35.91
SO	BUILDWID	FGD	46.59	44.39	47.87	49.89	50.39	50.16
SO	BUILDWID	FGD	50.01	48.99	47.83	45.45	43.70	45.33
SO	BUILDWID	FGD	45.83	65.82	60.55	53.44	44.71	50.20
SO	BUILDWID	FGD	46.59	44.39	47.87	49.89	50.39	50.16
SO	BUILDLEN	FGD	52.79	52.29	50.20	46.59	44.39	47.87
SO	BUILDLEN	FGD	49.89	59.08	65.72	70.36	72.87	44.01
SO	BUILDLEN	FGD	45.45	43.70	45.33	45.83	49.02	51.69
SO	BUILDLEN	FGD	52.79	52.29	50.20	46.59	44.39	47.87
SO	BUILDLEN	FGD	49.89	59.08	65.72	70.36	72.87	47.83
SO	BUILDLEN	FGD	45.45	43.70	45.33	45.83	49.02	51.69
SO	XBADJ	FGD	-53.37	-50.36	-45.82	-39.89	-34.26	-31.37
SO	XBADJ	FGD	-27.52	-131.84	-144.03	-151.84	-155.04	-124.39
SO	XBADJ	FGD	-3.33	0.31	3.70	6.72	5.47	3.07
SO	XBADJ	FGD	0.58	-1.93	-4.39	-6.71	-10.12	-16.50
SO	XBADJ	FGD	-22.37	72.76	78.31	81.48	82.18	-40.70
SO	XBADJ	FGD	-42.12	-44.01	-49.03	-52.56	-54.49	-54.76
SO	YBADJ	FGD	-10.30	-13.54	-16.78	-19.39	-22.16	-26.36
SO	YBADJ	FGD	-29.64	57.13	37.72	17.17	-3.91	-24.22
SO	YBADJ	FGD	-16.59	-12.07	-7.43	-2.57	2.37	6.84
SO	YBADJ	FGD	10.30	13.54	16.78	19.39	22.16	26.36
SO	YBADJ	FGD	29.64	-57.13	-37.72	-17.17	3.91	20.72
SO	YBADJ	FGD	16.59	12.07	7.43	2.57	-2.37	-6.84

SO	BUILDHGT	CT1	8.23	8.23	8.23	8.23	8.23	8.23
SO	BUILDHGT	CT1	8.23	54.25	54.25	6.10	6.10	6.10
SO	BUILDHGT	CT1	6.10	6.10	6.10	6.10	6.10	6.10
SO	BUILDHGT	CT1	8.23	8.23	8.23	27.13	54.25	54.25
SO	BUILDHGT	CT1	54.25	54.25	54.25	25.30	6.10	6.10
SO	BUILDHGT	CT1	6.10	6.10	6.10	6.10	6.10	6.10
SO	BUILDWID	CT1	6.79	6.83	6.66	6.29	6.13	6.57
SO	BUILDWID	CT1	6.80	65.82	60.55	5.33	5.25	5.00
SO	BUILDWID	CT1	4.60	4.46	4.90	5.19	5.33	5.30
SO	BUILDWID	CT1	6.79	6.83	6.66	47.61	69.28	70.25
SO	BUILDWID	CT1	69.08	65.82	60.55	47.62	5.25	5.00
SO	BUILDWID	CT1	4.60	4.46	4.90	5.19	5.33	5.30
SO	BUILDLEN	CT1	6.26	5.68	4.94	4.04	3.74	4.68
SO	BUILDLEN	CT1	5.48	59.08	65.72	5.11	4.77	4.28
SO	BUILDLEN	CT1	3.66	3.46	4.11	4.64	5.03	5.26
SO	BUILDLEN	CT1	6.26	5.68	4.94	23.72	29.46	40.67
SO	BUILDLEN	CT1	50.65	59.08	65.72	54.82	4.77	4.28
SO	BUILDLEN	CT1	3.66	3.46	4.11	4.64	5.03	5.26
SO	XBADJ	CT1	6.04	7.36	8.46	9.31	9.50	8.74
SO	XBADJ	CT1	7.71	103.29	93.71	-2.56	-2.38	-2.14

SO	XBADJ	CT1	-1.83	-1.73	-2.05	-2.32	-2.51	-2.63
SO	XBADJ	CT1	-12.29	-13.04	-13.40	-104.56	-141.96	-153.50
SO	XBADJ	CT1	-160.37	-162.37	-159.43	-145.78	-2.38	-2.14
SO	XBADJ	CT1	-1.83	-1.73	-2.06	-2.32	-2.51	-2.63
SO	YBADJ	CT1	-6.78	-5.08	-3.23	-1.29	0.70	2.67
SO	YBADJ	CT1	4.55	21.50	43.46	0.00	0.00	0.00
SO	YBADJ	CT1	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	CT1	6.78	5.08	3.23	36.78	45.56	23.70
SO	YBADJ	CT1	1.12	-21.50	-43.46	-31.63	0.00	0.00
SO	YBADJ	CT1	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	CT2	8.23	8.23	6.10	6.10	6.10	6.10
SO	BUILDHGT	CT2	6.10	8.23	8.23	8.23	8.23	8.23
SO	BUILDHGT	CT2	8.23	8.23	8.23	8.23	8.23	8.23
SO	BUILDHGT	CT2	8.23	8.23	6.10	6.10	54.25	54.25
SO	BUILDHGT	CT2	54.25	54.25	25.30	8.23	8.23	8.23
SO	BUILDHGT	CT2	8.23	8.23	8.23	8.23	8.23	8.23
SO	BUILDWID	CT2	5.11	4.77	6.66	6.28	6.15	6.58
SO	BUILDWID	CT2	6.81	5.03	5.26	5.33	5.25	5.00
SO	BUILDWID	CT2	4.60	4.46	4.90	5.19	5.33	5.30
SO	BUILDWID	CT2	5.11	4.77	6.66	6.28	69.28	70.25
SO	BUILDWID	CT2	69.08	65.82	101.91	5.33	5.25	5.00
SO	BUILDWID	CT2	4.60	4.46	4.90	5.19	5.33	5.30
SO	BUILDLEN	CT2	5.33	5.25	4.94	4.04	3.75	4.69
SO	BUILDLEN	CT2	5.48	5.33	5.30	5.11	4.77	4.28
SO	BUILDLEN	CT2	3.66	3.46	4.11	4.64	5.03	5.26
SO	BUILDLEN	CT2	5.33	5.25	4.94	4.04	29.46	40.67
SO	BUILDLEN	CT2	50.65	59.08	93.95	5.11	4.77	4.28
SO	BUILDLEN	CT2	3.66	3.46	4.11	4.64	5.03	5.26
SO	XBADJ	CT2	-2.67	-2.62	-13.39	-13.34	-13.25	-13.43
SO	XBADJ	CT2	-13.20	-2.66	-2.65	-2.56	-2.38	-2.14
SO	XBADJ	CT2	-1.83	-1.73	-2.05	-2.32	-2.51	-2.63
SO	XBADJ	CT2	-2.67	-2.63	8.45	9.30	-172.87	-183.60
SO	XBADJ	CT2	-188.76	-188.18	-181.88	-2.56	-2.38	-2.14
SO	XBADJ	CT2	-1.83	-1.73	-2.06	-2.32	-2.51	-2.63
SO	YBADJ	CT2	0.00	0.00	3.26	1.32	-0.67	-2.64
SO	YBADJ	CT2	-4.52	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	CT2	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	CT2	0.00	0.00	-3.26	-1.32	43.65	16.45
SO	YBADJ	CT2	-11.25	-38.61	-56.58	0.00	0.00	0.00
SO	YBADJ	CT2	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	EB	54.25	54.25	54.25	54.25	54.25	54.25
SO	BUILDHGT	EB	54.25	54.25	54.25	40.54	40.54	40.54
SO	BUILDHGT	EB	40.54	37.49	54.25	54.25	54.25	54.25
SO	BUILDHGT	EB	54.25	54.25	54.25	54.25	54.25	54.25
SO	BUILDHGT	EB	54.25	54.25	54.25	40.54	40.54	41.45
SO	BUILDHGT	EB	41.45	41.45	54.25	54.25	54.25	54.25
SO	BUILDWID	EB	70.36	72.87	73.16	71.23	69.28	70.25
SO	BUILDWID	EB	69.08	65.82	60.55	68.05	61.01	52.11
SO	BUILDWID	EB	41.64	57.02	40.67	50.65	59.08	65.72
SO	BUILDWID	EB	70.36	72.87	73.16	71.23	69.28	70.25
SO	BUILDWID	EB	69.08	65.82	60.55	68.05	61.01	76.55
SO	BUILDWID	EB	46.59	44.39	40.67	50.65	59.08	65.72
SO	BUILDLEN	EB	53.44	44.71	35.91	30.36	29.46	40.67
SO	BUILDLEN	EB	50.65	59.08	65.72	70.36	72.87	73.16
SO	BUILDLEN	EB	71.23	72.89	70.25	69.08	65.82	60.55
SO	BUILDLEN	EB	53.44	44.71	35.91	30.36	29.46	40.67
SO	BUILDLEN	EB	50.65	59.08	65.72	70.36	72.87	47.83
SO	BUILDLEN	EB	45.45	43.70	70.25	69.08	65.82	60.55
SO	XBADJ	EB	-83.77	-77.35	-68.58	-57.73	-48.72	-46.58

SO	XBADJ	EB	-43.03	-38.17	-32.15	-25.15	-17.39	-9.10
SO	XBADJ	EB	-0.54	6.29	12.96	18.27	23.03	27.09
SO	XBADJ	EB	30.32	32.64	32.67	27.38	19.26	5.91
SO	XBADJ	EB	-7.62	-20.91	-33.57	-45.21	-55.48	-185.13
SO	XBADJ	EB	-188.95	-188.76	-83.21	-87.35	-88.84	-87.64
SO	YBADJ	EB	-10.03	-19.04	-27.48	-35.08	-41.89	-48.08
SO	YBADJ	EB	-52.81	-55.94	-57.36	-49.74	-46.85	-42.53
SO	YBADJ	EB	-36.92	-18.61	-26.25	-17.71	-8.63	0.71
SO	YBADJ	EB	10.03	19.04	27.48	35.08	41.89	48.08
SO	YBADJ	EB	52.81	55.94	57.36	49.74	46.85	33.94
SO	YBADJ	EB	17.51	-12.52	26.25	17.71	8.63	-0.71

APPENDIX B

AERSURFACE PROGRAM

AERSURFACE Input File

```
"new_hampshire_NLCD_erd031600.tif"    ** Land use data file
"LandUse.dat"                          ** Output file with sfc values for AERMET Stage 3
LATLON                                  ** Coordinate type (UTM, LATLON)
  43.140000                            ** Latitude
 -71.470000                            ** Longitude
NAD83                                    ** Datum
  1.0                                     ** Study radius for surface roughness (km)
Y                                         ** Vary by sector? (Y/N)
  5                                         ** Number of sectors
   80                                       ** Start of sector 1
   150                                      ** Start of sector 2
   180                                      ** Start of sector 3
   315                                      ** Start of sector 4
   345                                      ** Start of sector 5
M                                         ** Temporal resolution (A=ANNUAL, M=MONTHLY, S=SEASONAL)
Y                                         ** Continuous snow cover at least one month? (Y/N)
Y                                         ** Reassign months to seasons? (Y/N)
  11                                       ** Late autumn after frost and harvest, or winter with no snow
  12 1 2 3                                ** Winter with continuous snow on the ground
  4 5                                       ** Transitional spring (partial green coverage, short annuals)
  6 7 8                                     ** Midsummer with lush vegetation
  9 10                                      ** Autumn with unharvested cropland
N                                         ** Airport? (Y/N)
A                                         ** Surface Moisture (A=Average, W=Wet, D=Dry)
```

AERSURFACE Output File

```
** Generated by AERSURFACE, dated 08009
** Center Latitude (decimal degrees):      43.140000
** Center Longitude (decimal degrees):     -71.470000
** Datum: NAD83
** Study radius (km) for surface roughness:   1.0
** Airport? N, Continuous snow cover? Y
** Surface moisture? Average, Arid region? N
** Month/Season assignments? User-specified
** Late autumn after frost and harvest, or winter with no snow: 11
** Winter with continuous snow on the ground: 12 1 2 3
** Transitional spring (partial green coverage, short annuals): 4 5
** Midsummer with lush vegetation: 6 7 8
** Autumn with unharvested cropland: 9 10
**
FREQ_SECT  MONTHLY  5
SECTOR    1     80   150
SECTOR    2     150   180
SECTOR    3     180   315
SECTOR    4     315   345
SECTOR    5     345    80
**
**          Month   Sect   Alb     Bo     Zo
SITE_CHAR  1       1   0.42   0.48   0.088
SITE_CHAR  1       2   0.42   0.48   0.447
SITE_CHAR  1       3   0.42   0.48   0.433
SITE_CHAR  1       4   0.42   0.48   0.152
SITE_CHAR  1       5   0.42   0.48   0.099
SITE_CHAR  2       1   0.42   0.48   0.088
SITE_CHAR  2       2   0.42   0.48   0.447
SITE_CHAR  2       3   0.42   0.48   0.433
SITE_CHAR  2       4   0.42   0.48   0.152
SITE_CHAR  2       5   0.42   0.48   0.099
SITE_CHAR  3       1   0.42   0.48   0.088
SITE_CHAR  3       2   0.42   0.48   0.447
SITE_CHAR  3       3   0.42   0.48   0.433
SITE_CHAR  3       4   0.42   0.48   0.152
SITE_CHAR  3       5   0.42   0.48   0.099
SITE_CHAR  4       1   0.14   0.58   0.107
SITE_CHAR  4       2   0.14   0.58   0.463
SITE_CHAR  4       3   0.14   0.58   0.498
SITE_CHAR  4       4   0.14   0.58   0.166
SITE_CHAR  4       5   0.14   0.58   0.123
SITE_CHAR  5       1   0.14   0.58   0.107
SITE_CHAR  5       2   0.14   0.58   0.463
SITE_CHAR  5       3   0.14   0.58   0.498
SITE_CHAR  5       4   0.14   0.58   0.166
SITE_CHAR  5       5   0.14   0.58   0.123
SITE_CHAR  6       1   0.15   0.37   0.128
SITE_CHAR  6       2   0.15   0.37   0.469
SITE_CHAR  6       3   0.15   0.37   0.558
SITE_CHAR  6       4   0.15   0.37   0.185
SITE_CHAR  6       5   0.15   0.37   0.160
SITE_CHAR  7       1   0.15   0.37   0.128
SITE_CHAR  7       2   0.15   0.37   0.469
SITE_CHAR  7       3   0.15   0.37   0.558
SITE_CHAR  7       4   0.15   0.37   0.185
SITE_CHAR  7       5   0.15   0.37   0.160
SITE_CHAR  8       1   0.15   0.37   0.128
SITE_CHAR  8       2   0.15   0.37   0.469
SITE_CHAR  8       3   0.15   0.37   0.558
SITE_CHAR  8       4   0.15   0.37   0.185
SITE_CHAR  8       5   0.15   0.37   0.160
```

SITE_CHAR	9	1	0.15	0.75	0.128
SITE_CHAR	9	2	0.15	0.75	0.469
SITE_CHAR	9	3	0.15	0.75	0.558
SITE_CHAR	9	4	0.15	0.75	0.185
SITE_CHAR	9	5	0.15	0.75	0.160
SITE_CHAR	10	1	0.15	0.75	0.128
SITE_CHAR	10	2	0.15	0.75	0.469
SITE_CHAR	10	3	0.15	0.75	0.558
SITE_CHAR	10	4	0.15	0.75	0.185
SITE_CHAR	10	5	0.15	0.75	0.160
SITE_CHAR	11	1	0.15	0.76	0.100
SITE_CHAR	11	2	0.15	0.76	0.452
SITE_CHAR	11	3	0.15	0.76	0.460
SITE_CHAR	11	4	0.15	0.76	0.159
SITE_CHAR	11	5	0.15	0.76	0.113
SITE_CHAR	12	1	0.42	0.48	0.088
SITE_CHAR	12	2	0.42	0.48	0.447
SITE_CHAR	12	3	0.42	0.48	0.433
SITE_CHAR	12	4	0.42	0.48	0.152
SITE_CHAR	12	5	0.42	0.48	0.099

APPENDIX C

BUILDING PROFILE INPUT PROGRAM FOR INTERACTIVE SOURCES

BPIP Input File (all UTM's for stacks and buildings provided by DES in NAD 1927 zone 19)

'Interactive Source Inventory Provided by DES - 22 February 2008 - Elev added for last 4 stacks'
'P'
'METERS' 1.0
'UTMY' 0
33
'ESMIB1' 1 132.588
4 9.4488
299409.91 4799925.
299440.5 4799885.
299407.28 4799857.
299375.81 4799897.5
'Annex' 1 94.8
4 15.30096
292312 4788936
292299.9 4788928.4
292226.2 4789046.3
292238.3 4789053.9
'VocEd' 1 94.3
4 6.096
292255.8 4789072
292226.3 4789053.5
292216.2 4789069.8
292245.6 4789088.2
'Auto' 2 94.2
6 5.0292
292233.1 4789093.4
292213.7 4789081.2
292181.6 4789132.7
292208.7 4789149.6
292233.1 4789110.6
292225.3 4789105.8
4 13.1064
292228.7 4789117.6
292201.6 4789100.6
292181.6 4789132.7
292208.7 4789149.6
'Gym' 1 94.9
6 8.5344
292203.8 4789068.2
292185.7 4789056.9
292150.2 4789113.8
292171.2 4789126.9
292187.3 4789101
292184.7 4789099.4
'Close' 2 96.9
8 13.4112
292169 4789052.6
292148.4 4789039.7
292143.7 4789047.2
292117.6 4789030.9
292094 4789068.6
292124.2 4789087.5
292126.5 4789083.9
292143 4789094.2
4 13.4112
292137.5 4789059.9
292128.5 4789054.2
292122.8 4789063.3
292131.9 4789068.9

'Wall'	1	93.9
8	6.096	
292238.3	4789053.9	
292264.7	4789070.3	
292209.6	4789158.5	
292073.4	4789073.4	
292073.9	4789072.6	
292209.3	4789157.2	
292263.5	4789070.6	
292237.9	4789054.6	
'MEDSECU3'	2	100
16	10.668	
292185.1	4788853.1	
292178.4	4788854.7	
292170.5	4788867.4	
292159.9	4788860.7	
292156.4	4788866.4	
292159.5	4788879.2	
292156.9	4788883.3	
292143.6	4788886.8	
292140	4788892.5	
292150.6	4788899.2	
292143.4	4788910.8	
292145.1	4788917.2	
292157.1	4788913.6	
292153	4788896	
292169.2	4788870.1	
292187.3	4788865.3	
16	10.668	
292133.9	4788935.1	
292127.2	4788936.6	
292119.3	4788949.3	
292108.7	4788942.7	
292105.2	4788948.4	
292108.3	4788961.1	
292105.7	4788965.3	
292092.4	4788968.8	
292088.8	4788974.5	
292099.4	4788981.1	
292092.2	4788992.7	
292093.9	4788999.2	
292105.9	4788995.5	
292101.8	4788977.9	
292118	4788952	
292136.1	4788947.2	
'BOILRPLT'	1	107
4	5.4864	
292107.5	4788883.7	
292093.3	4788874.8	
292081.6	4788893.4	
292095.9	4788902.3	
'ALLTEX'	1	86.563
4	4.572	
300762	4761489	
300762	4761511	
300838	4761511	
300838	4761489	
'main'	1	87.48
4	23.77	
290832.69	4795856.5	
290874.57	4795795	
290820.63	4795765.5	
290778.76	4795826.5	

'B1'	1	330.
4	27.432	
293110.	4785825.	
293110.	4785854.	
293186.	4785854.	
293186.	4785825	
'B2'	1	330.
4	21.9456	
293099.	4785763.	
293139.	4785763.	
293139.	4785747.	
293099.	4785747.	
'B3'	1	330.
4	27.432	
293080.	4785826.	
293080.	4785844.	
293070.	4785844.	
293070.	4785826.	
'B4'	1	330.
4	16.4592	
293070.	4785803.	
293070.	4785787.	
293061.	4785787.	
293061.	4785803.	
'enter'	1	113.00
23	29.67	
291859	4785672	
291857.8	4785676.8	
291852.9	4785676.2	
291846.2	4785707.9	
291841.56	4785707	
291841.3	4785711	
291837	4785710.4	
291830.9	4785739.6	
291840.1	4785741.5	
291838.3	4785746.9	
291842.63	4785748	
291841.72	4785752.5	
291851.1	4785754.6	
291852.3	4785750	
291856.53	4785750.5	
291855.9	4785755.5	
291865.1	4785757.3	
291866.3	4785752.4	
291870.6	4785753.6	
291885.2	4785682.9	
291880.9	4785681.7	
291882.1	4785677.4	
291859	4785672	
'cancer'	1	106.00
18	23.66	
291790.7	4785613.4	
291780.3	4785623.8	
291765.7	4785690.9	
291773	4785692.1	
291772.7	4785693.3	
291791.9	4785697	
291801.7	4785691.8	
291805.3	4785671.3	
291809.84	4785672.5	
291811.97	4785665	
291808.94	4785664	
291814.81	4785643.5	

291805.3	4785640.9
291807.8	4785629.3
291798	4785628.1
291798	4785625
291806.6	4785626.8
291807.8	4785623.2
'South'	1
19	110.00
	4.11
291824.8	4785645.1
291819.4	4785674.4
291818.1	4785673.8
291813	4785698.2
291847	4785704.5
291853.2	4785675.9
291858.06	4785676.5
291858.94	4785672
291861.97	4785672.5
291863.2	4785665.3
291868.38	4785666.5
291869.47	4785663
291863.9	4785662.2
291866.3	4785653.7
291849.8	4785650
291850.4	4785647.6
291833.7	4785643.9
291833.4	4785646.7
291824.8	4785645.1
'6thfloor'	1
18	115.00
	24.72
291772.4	4785693.3
291771.8	4785697.9
291765.1	4785696.6
291764.5	4785699.4
291770.6	4785700.6
291770	4785705.5
291792.5	4785710.1
291788.3	4785732.9
291793.1	4785734.1
291792.09	4785740.5
291794.38	4785741
291795.78	4785734.5
291802.09	4785736
291806.6	4785716.5
291809.6	4785716.8
291810.63	4785711
291807.44	4785710.5
291784.44	4785695.5
'boilTier'	1
13	116.00
	14.83
291807.5	4785710.4
291802.3	4785736
291795.6	4785734.7
291794.4	4785742.1
291800.53	4785743
291801.4	4785738.4
291812	4785740.8
291813.59	4785732
291816.9	4785732.6
291816.47	4785735
291831.06	4785738.5
291836.06	4785716
291807.5	4785710.4

'7floor'	1	114.00
20	29.67	
291811.63	4785666.5	
291809.56	4785672.5	
291805.38	4785671.5	
291802.69	4785686.5	
291797.72	4785688.5	
291796.66	4785686	
291788.44	4785690	
291789.69	4785693	
291784.53	4785695.5	
291807.69	4785710.5	
291835.56	4785716	
291836.91	4785710.5	
291841.19	4785711	
291841.72	4785707	
291846.03	4785707.5	
291846.97	4785704.5	
291813.09	4785698	
291818.03	4785674	
291813.22	4785673	
291814.47	4785667.5	
'yeople'	1	112.00
19	7.32	
291695	4785700	
291692	4785715.2	
291715.72	4785720.5	
291711.5	4785735.4	
291707	4785734	
291704.1	4785745.1	
291716.72	4785747.5	
291715.7	4785750.6	
291722.72	4785752	
291729.13	4785726.5	
291731	4785727.1	
291732.81	4785721.5	
291748	4785725	
291750.5	4785718.3	
291747.28	4785717.5	
291748.69	4785713.5	
291729.7	4785709.1	
291730.41	4785706.5	
291695	4785700	
'gen'	1	117.00
9	4.11	
291821.34	4785766.5	
291796.2	4785783.5	
291802.9	4785793.3	
291829.1	4785776.2	
291827.41	4785772.5	
291832.2	4785768.3	
291829.1	4785764	
291824.69	4785768	
291822.88	4785766	

'talltier'	1	115.00
8	34.44	
291788.34	4785690	
291789.72	4785693	
291784.56	4785695.5	
291791.88	4785697	
291801.63	4785692	
291802.63	4785686.5	
291797.84	4785688.5	
291796.56	4785686	
'memorial'	1	118.00
16	14.02	
291810.63	4785809.5	
291802.3	4785872.5	
291821.2	4785875	
291821.5	4785871.3	
291827.9	4785871.9	
291827.9	4785870.7	
291835.2	4785871.3	
291841.3	4785867.6	
291845	4785862.2	
291852.38	4785805.5	
291830.09	4785804	
291830.09	4785800	
291827.9	4785800	
291827.03	4785808	
291822.44	4785807.5	
291821.97	4785810.5	
'penthous'	1	115.82
4	32.89	
291892.7	4785720.5	
291911.39	4785723.29	
291913.28	4785710.63	
291894.59	4785707.84	
'NorthAdd'	1	115.82
4	10.89	
291825.1	4785771.1	
291868.79	4785780.55	
291875.57	4785749.17	
291831.88	4785739.72	
'NewTower'	1	115.82
4	26.33	
291885.9	4785676.4	
291875.21	4785733.51	
291919.05	4785741.71	
291929.74	4785684.6	
'PWRHSE01'	1	85.344
8	4.72	
290774	4785239	
290765	4785272	
290792	4785280	
290789	4785290	
290799	4785292	
290805	4785273	
290782	4785267	
290789	4785243	
'PWRHSE02'	1	85.344
4	14.02	
290774	4785239	
290768	4785263	
290782	4785268	
290789	4785243	

'PWRHSE03'	1	85.344		
4	17.91			
290783	4785241			
290776	4785266			
290782	4785268			
290789	4785243			
'PWRHSE04'	1	85.344		
4	16.			
290774	4785248			
290773	4785253			
290777	4785254			
290778	4785249			
'PWRHSE05'	1	85.344		
4	20.12			
290784	4785251			
290782	4785255			
290785	4785256			
290787	4785252			
9				
'WHELCONC'	87.48	73.152	290880.	4795840.
'ESMI'	132.59	16.764	299458.	4799915.
'NHDOC'	106.98	12.6492	292097.8	4788884.8
'NYCOA'	44.2	53.6448	298420.	4760590.
'ALLTEX'	86.56	6.096	300800.	4761500.
'YDC'	68.9	19.812	298500.	4765500.
'CONSTEAM'	96.9	45.72	293072.	4785807.
'CONCHOSP'	125.0	37.7952	291821.69	4785714.
'STPAULS'	91.1	30.48	290777.56	4785233.06

BPIP Output File

Interactive Source Inventory Provided by DES - 22 February 2008 - Elev added f

BPIP (Dated: 04274)

DATE : 2/26/2008

TIME : 10:20: 6

Interactive Source Inventory Provided by DES - 22 February 2008 - Elev added f

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BPIP PROCESSING INFORMATION:

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The P flag has been set for preparing downwash related data
for a model run utilizing the PRIME algorithm.

Inputs entered in METERS will be converted to meters using
a conversion factor of 1.0000. Output will be in meters.

The UTMP variable is set to UTMY. The input is assumed to be in
UTM coordinates. BPIP will move the UTM origin to the first pair of
UTM coordinates read. The UTM coordinates of the new origin will
be subtracted from all the other UTM coordinates entered to form
this new local coordinate system.

Plant north is set to 0.00 degrees with respect to True North.

Interactive Source Inventory Provided by DES - 22 February 2008 - Elev added f

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQNL	Preliminary* GEP Stack Height Value
WHELCONC	73.15	0.00	59.43	65.00
ESMI	16.76	0.00	23.62	65.00
NHDOC	12.65	6.98	19.69	65.00
NYCOA	53.64	N/A	0.00	65.00
ALLTEX	6.10	0.00	11.43	65.00
YDC	19.81	N/A	0.00	65.00
CONSTEAM	45.72	-233.10	301.68	301.68
CONCHOSP	37.80	9.18	65.00	65.00
STPAULS	30.48	5.76	39.02	65.00

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

BPIP (Dated: 04274)

DATE : 2/26/2008

TIME : 10:20: 6

Interactive Source Inventory Provided by DES - 22 February 2008 - Elev added f

BPIP output is in meters

SO BUILDHGT	WHELCONC	23.77	23.77	23.77	23.77	23.77	23.77
SO BUILDHGT	WHELCONC	23.77	23.77	23.77	23.77	23.77	23.77
SO BUILDHGT	WHELCONC	0.00	0.00	0.00	0.00	0.00	23.77
SO BUILDHGT	WHELCONC	23.77	23.77	23.77	23.77	23.77	23.77
SO BUILDHGT	WHELCONC	23.77	23.77	23.77	23.77	23.77	23.77
SO BUILDHGT	WHELCONC	0.00	0.00	0.00	0.00	0.00	23.77
SO BUILDWID	WHELCONC	99.82	100.81	98.72	93.64	85.72	75.19
SO BUILDWID	WHELCONC	81.39	87.52	91.00	91.71	89.64	84.84
SO BUILDWID	WHELCONC	0.00	0.00	0.00	0.00	0.00	95.81
SO BUILDWID	WHELCONC	99.82	100.81	98.72	93.64	85.72	75.19
SO BUILDWID	WHELCONC	81.39	87.52	91.00	91.71	89.64	84.84
SO BUILDWID	WHELCONC	0.00	0.00	0.00	0.00	0.00	95.81
SO BUILDLEN	WHELCONC	91.71	89.64	84.84	77.46	67.73	67.22
SO BUILDLEN	WHELCONC	79.26	88.89	95.81	99.82	100.81	98.72
SO BUILDLEN	WHELCONC	0.00	0.00	0.00	0.00	0.00	91.00
SO BUILDLEN	WHELCONC	91.71	89.64	84.84	77.46	67.73	67.22
SO BUILDLEN	WHELCONC	79.26	88.88	95.81	99.82	100.81	98.72
SO BUILDLEN	WHELCONC	0.00	0.00	0.00	0.00	0.00	91.00
SO XBADJ	WHELCONC	-83.68	-90.31	-94.20	-95.23	-93.37	-94.43
SO XBADJ	WHELCONC	-99.75	-102.05	-101.24	-97.36	-90.52	-80.93
SO XBADJ	WHELCONC	0.00	0.00	0.00	0.00	0.00	-16.50
SO XBADJ	WHELCONC	-8.03	0.68	9.37	17.77	25.64	27.20
SO XBADJ	WHELCONC	20.49	13.16	5.43	-2.47	-10.29	-17.80
SO XBADJ	WHELCONC	0.00	0.00	0.00	0.00	0.00	-74.50
SO YBADJ	WHELCONC	47.45	40.11	31.56	22.06	11.88	1.34
SO YBADJ	WHELCONC	-9.01	-19.30	-29.00	-37.82	-45.49	-51.78
SO YBADJ	WHELCONC	0.00	0.00	0.00	0.00	0.00	-53.33
SO YBADJ	WHELCONC	-47.45	-40.11	-31.56	-22.06	-11.88	-1.34
SO YBADJ	WHELCONC	9.01	19.30	29.00	37.82	45.49	51.78
SO YBADJ	WHELCONC	0.00	0.00	0.00	0.00	0.00	53.33

SO BUILDHGT	ESMI	0.00	0.00	9.45	9.45	9.45	9.45
SO BUILDHGT	ESMI	9.45	9.45	9.45	9.45	0.00	0.00
SO BUILDHGT	ESMI	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	ESMI	0.00	0.00	9.45	0.00	0.00	0.00
SO BUILDHGT	ESMI	0.00	0.00	9.45	9.45	0.00	0.00
SO BUILDHGT	ESMI	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	ESMI	0.00	0.00	62.27	57.59	51.25	57.57
SO BUILDWID	ESMI	63.00	66.51	68.00	67.42	0.00	0.00
SO BUILDWID	ESMI	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	ESMI	0.00	0.00	62.27	0.00	0.00	0.00
SO BUILDWID	ESMI	0.00	0.00	68.00	67.42	0.00	0.00
SO BUILDWID	ESMI	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	ESMI	0.00	0.00	60.20	53.78	45.72	49.77
SO BUILDLEN	ESMI	56.51	61.54	64.69	65.88	0.00	0.00
SO BUILDLEN	ESMI	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	ESMI	0.00	0.00	60.20	0.00	0.00	0.00
SO BUILDLEN	ESMI	0.00	0.00	64.69	65.88	0.00	0.00
SO BUILDLEN	ESMI	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ	ESMI	0.00	0.00	-75.59	-77.03	-76.14	-79.93

SO	XBADJ	ESMI	-83.22	-83.98	-82.19	-77.90	0.00	0.00
SO	XBADJ	ESMI	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	ESMI	0.00	0.00	15.38	0.00	0.00	0.00
SO	XBADJ	ESMI	0.00	0.00	17.50	12.02	0.00	0.00
SO	XBADJ	ESMI	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	ESMI	0.00	0.00	31.29	22.92	13.80	3.92
SO	YBADJ	ESMI	-5.66	-15.06	-24.00	-32.21	0.00	0.00
SO	YBADJ	ESMI	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	ESMI	0.00	0.00	-31.29	0.00	0.00	0.00
SO	YBADJ	ESMI	0.00	0.00	24.00	32.21	0.00	0.00
SO	YBADJ	ESMI	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	NHDOC	5.49	5.49	5.49	5.49	5.49	5.49
SO	BUILDHGT	NHDOC	5.49	5.49	5.49	5.49	5.49	5.49
SO	BUILDHGT	NHDOC	5.49	5.49	5.49	5.49	5.49	5.49
SO	BUILDHGT	NHDOC	5.49	5.49	5.49	5.49	5.49	10.67
SO	BUILDHGT	NHDOC	10.67	10.67	10.67	10.67	10.67	5.49
SO	BUILDHGT	NHDOC	5.49	5.49	5.49	5.49	5.49	5.49
SO	BUILDWID	NHDOC	27.19	27.66	27.28	26.08	24.08	22.52
SO	BUILDWID	NHDOC	24.95	26.63	27.50	27.53	26.73	25.12
SO	BUILDWID	NHDOC	22.74	19.67	17.58	21.02	23.82	25.90
SO	BUILDWID	NHDOC	27.19	27.66	27.28	26.08	24.08	75.51
SO	BUILDWID	NHDOC	73.92	70.07	64.10	56.18	48.75	25.12
SO	BUILDWID	NHDOC	22.74	19.67	17.58	21.02	23.82	25.90
SO	BUILDLEN	NHDOC	27.53	26.73	25.12	22.74	19.67	17.58
SO	BUILDLEN	NHDOC	21.02	23.82	25.90	27.19	27.66	27.28
SO	BUILDLEN	NHDOC	26.08	24.08	22.52	24.95	26.63	27.50
SO	BUILDLEN	NHDOC	27.53	26.73	25.12	22.74	19.67	27.36
SO	BUILDLEN	NHDOC	35.14	41.86	47.30	51.31	59.51	27.28
SO	BUILDLEN	NHDOC	26.08	24.08	22.52	24.95	26.63	27.50
SO	XBADJ	NHDOC	-10.63	-10.94	-10.91	-10.55	-9.88	-9.73
SO	XBADJ	NHDOC	-12.28	-14.46	-16.20	-17.45	-18.16	-18.33
SO	XBADJ	NHDOC	-17.94	-17.00	-16.11	-17.09	-17.56	-17.50
SO	XBADJ	NHDOC	-16.90	-15.79	-14.21	-12.18	-9.79	-67.76
SO	XBADJ	NHDOC	-77.43	-84.75	-89.50	-91.53	-92.88	-8.95
SO	XBADJ	NHDOC	-8.14	-7.08	-6.41	-7.86	-9.07	-10.00
SO	YBADJ	NHDOC	3.85	4.34	4.69	4.90	4.96	4.85
SO	YBADJ	NHDOC	4.62	4.25	3.75	3.14	2.43	1.65
SO	YBADJ	NHDOC	0.82	-0.04	-0.94	-1.77	-2.55	-3.25
SO	YBADJ	NHDOC	-3.85	-4.34	-4.69	-4.90	-4.96	33.35
SO	YBADJ	NHDOC	22.69	11.34	-0.35	-12.03	-22.97	-1.65
SO	YBADJ	NHDOC	-0.82	0.04	0.94	1.77	2.55	3.25

SO	BUILDLN	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	YDC	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	CONSTEAM	27.43	27.43	27.43	27.43	27.43	27.43
SO	BUILDHGT	CONSTEAM	27.43	27.43	16.46	16.46	16.46	16.46
SO	BUILDHGT	CONSTEAM	16.46	16.46	27.43	27.43	27.43	27.43
SO	BUILDHGT	CONSTEAM	27.43	27.43	27.43	27.43	27.43	27.43
SO	BUILDHGT	CONSTEAM	27.43	27.43	16.46	16.46	16.46	21.95
SO	BUILDHGT	CONSTEAM	21.95	21.95	21.95	21.95	27.43	27.43
SO	BUILDWID	CONSTEAM	12.97	15.55	80.32	76.86	71.07	63.11
SO	BUILDWID	CONSTEAM	53.25	41.76	16.00	17.32	18.11	18.36
SO	BUILDWID	CONSTEAM	18.04	17.18	17.66	15.55	12.97	10.00
SO	BUILDWID	CONSTEAM	12.97	15.55	80.32	76.86	71.07	63.12
SO	BUILDWID	CONSTEAM	53.25	41.76	16.00	17.32	18.11	33.86
SO	BUILDWID	CONSTEAM	37.97	40.93	42.64	43.06	12.97	10.00
SO	BUILDLN	CONSTEAM	19.46	20.33	63.11	71.07	76.86	80.32
SO	BUILDLN	CONSTEAM	81.33	79.88	9.00	11.64	13.93	15.79
SO	BUILDLN	CONSTEAM	17.18	18.04	20.59	20.33	19.46	18.00
SO	BUILDLN	CONSTEAM	19.46	20.33	63.11	71.07	76.86	80.32
SO	BUILDLN	CONSTEAM	81.33	79.88	9.00	11.64	13.93	42.64
SO	BUILDLN	CONSTEAM	40.93	37.97	33.86	28.72	19.46	18.00
SO	XBADJ	CONSTEAM	18.36	17.17	34.59	38.21	40.68	41.91
SO	XBADJ	CONSTEAM	41.86	40.55	-11.00	-10.14	-8.97	-7.53
SO	XBADJ	CONSTEAM	-5.86	-4.01	-33.04	-35.45	-36.79	-37.00
SO	XBADJ	CONSTEAM	-37.83	-37.51	-97.70	-109.28	-117.54	-122.23
SO	XBADJ	CONSTEAM	-123.20	-120.43	2.00	-1.50	-4.96	-88.02
SO	XBADJ	CONSTEAM	-89.89	-89.03	-85.46	-79.30	17.32	19.00
SO	YBADJ	CONSTEAM	1.91	6.76	-49.57	-37.33	-23.96	-9.85
SO	YBADJ	CONSTEAM	4.55	18.81	-12.00	-12.95	-13.50	-13.64
SO	YBADJ	CONSTEAM	-13.37	-12.69	16.60	12.40	7.82	3.00
SO	YBADJ	CONSTEAM	-1.91	-6.76	49.57	37.33	23.96	9.85
SO	YBADJ	CONSTEAM	-4.55	-18.81	12.00	12.95	13.50	21.53
SO	YBADJ	CONSTEAM	9.62	-2.58	-14.70	-26.38	-7.82	-3.00

SO	BUILDHGT	CONCHOSP	29.67	29.67	29.67	29.67	29.67	29.67
SO	BUILDHGT	CONCHOSP	29.67	29.67	29.67	29.67	29.67	29.67
SO	BUILDHGT	CONCHOSP	29.67	29.67	29.67	29.67	29.67	29.67
SO	BUILDHGT	CONCHOSP	29.67	29.67	29.67	29.67	29.67	29.67
SO	BUILDHGT	CONCHOSP	29.67	29.67	29.67	29.67	29.67	29.67
SO	BUILDHGT	CONCHOSP	29.67	29.67	29.67	29.67	29.67	29.67
SO	BUILDWID	CONCHOSP	86.16	87.32	85.83	81.73	83.48	85.23
SO	BUILDWID	CONCHOSP	84.38	82.94	85.30	85.06	82.24	76.92
SO	BUILDWID	CONCHOSP	73.67	75.07	74.20	74.31	76.43	82.38
SO	BUILDWID	CONCHOSP	86.16	87.32	85.83	81.73	83.49	85.23
SO	BUILDWID	CONCHOSP	84.38	82.95	85.30	85.06	82.24	76.92
SO	BUILDWID	CONCHOSP	73.67	75.07	74.20	74.31	76.43	82.38
SO	BUILDLN	CONCHOSP	85.06	82.24	76.92	73.67	75.07	74.20
SO	BUILDLN	CONCHOSP	74.31	76.43	82.38	86.16	87.32	85.83
SO	BUILDLN	CONCHOSP	81.73	83.49	85.23	84.38	82.94	85.30
SO	BUILDLN	CONCHOSP	85.06	82.24	76.92	73.67	75.07	74.20

SO	BUILDLN	CONCHOSP	74.31	76.43	82.38	86.16	87.32	85.83
SO	BUILDLN	CONCHOSP	81.73	83.49	85.23	84.38	82.94	85.30
SO	XBADJ	CONCHOSP	-34.88	-26.71	-17.72	-8.89	-0.39	8.13
SO	XBADJ	CONCHOSP	13.16	13.52	9.21	4.63	-0.10	-4.82
SO	XBADJ	CONCHOSP	-9.40	-16.62	-23.33	-29.33	-35.10	-43.30
SO	XBADJ	CONCHOSP	-50.18	-55.54	-59.20	-64.77	-74.69	-82.33
SO	XBADJ	CONCHOSP	-87.47	-89.95	-91.59	-90.78	-87.22	-81.00
SO	XBADJ	CONCHOSP	-72.33	-66.87	-61.90	-55.05	-47.84	-42.00
SO	YBADJ	CONCHOSP	-47.70	-43.56	-38.09	-31.46	-25.13	-19.29
SO	YBADJ	CONCHOSP	-12.86	-6.37	0.65	7.65	14.42	20.74
SO	YBADJ	CONCHOSP	27.94	37.15	45.23	50.31	51.73	50.40
SO	YBADJ	CONCHOSP	47.70	43.56	38.09	31.46	25.12	19.29
SO	YBADJ	CONCHOSP	12.86	6.37	-0.65	-7.65	-14.41	-20.74
SO	YBADJ	CONCHOSP	-27.94	-37.15	-45.23	-50.31	-51.73	-50.40

SO	BUILDHGT	STPAULS	17.91	17.91	17.91	17.91	17.91	17.91
SO	BUILDHGT	STPAULS	17.91	17.91	17.91	17.91	14.02	14.02
SO	BUILDHGT	STPAULS	14.02	16.00	16.00	16.00	16.00	16.00
SO	BUILDHGT	STPAULS	17.91	17.91	17.91	17.91	17.91	17.91
SO	BUILDHGT	STPAULS	17.91	17.91	17.91	17.91	14.02	14.02
SO	BUILDHGT	STPAULS	14.02	16.00	16.00	16.00	16.00	16.00
SO	BUILDWID	STPAULS	16.80	20.08	22.76	24.74	25.98	26.42
SO	BUILDWID	STPAULS	26.06	26.76	27.00	26.42	29.99	29.12
SO	BUILDWID	STPAULS	27.36	18.98	16.93	14.36	14.02	16.00
SO	BUILDWID	STPAULS	16.80	20.08	22.76	24.74	25.98	26.42
SO	BUILDWID	STPAULS	26.06	26.76	27.00	26.42	29.99	29.12
SO	BUILDWID	STPAULS	27.36	18.98	16.93	14.36	14.02	16.00
SO	BUILDLN	STPAULS	26.42	25.03	22.88	20.04	16.59	12.63
SO	BUILDLN	STPAULS	8.29	8.81	13.00	16.80	26.57	28.19
SO	BUILDLN	STPAULS	28.94	25.98	26.42	26.06	26.76	27.00
SO	BUILDLN	STPAULS	26.42	25.03	22.88	20.04	16.59	12.63
SO	BUILDLN	STPAULS	8.29	8.81	13.00	16.80	26.57	28.19
SO	BUILDLN	STPAULS	28.94	25.98	26.42	26.06	26.76	27.00
SO	XBADJ	STPAULS	8.76	9.32	9.60	9.58	9.27	8.68
SO	XBADJ	STPAULS	7.83	4.18	-1.56	-7.26	-19.22	-23.25
SO	XBADJ	STPAULS	-26.57	-26.24	-29.31	-31.49	-33.64	-34.94
SO	XBADJ	STPAULS	-35.18	-34.35	-32.48	-29.62	-25.86	-21.31
SO	XBADJ	STPAULS	-16.12	-12.99	-11.44	-9.54	-7.35	-4.94
SO	XBADJ	STPAULS	-2.37	0.26	2.89	5.43	6.88	7.94
SO	YBADJ	STPAULS	-1.14	2.69	6.44	10.00	13.25	16.10
SO	YBADJ	STPAULS	18.46	20.26	21.44	21.97	19.36	17.92
SO	YBADJ	STPAULS	15.94	16.37	12.85	8.94	5.98	3.44
SO	YBADJ	STPAULS	1.14	-2.69	-6.44	-10.00	-13.25	-16.10
SO	YBADJ	STPAULS	-18.46	-20.26	-21.44	-21.97	-19.36	-17.92
SO	YBADJ	STPAULS	-15.94	-16.37	-12.85	-8.94	-5.98	-3.44